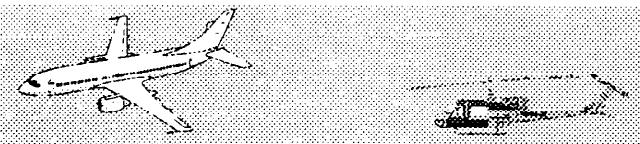
130615 FAA-01-8994-40 (33)



RTEXX Consulting 212 Timberline North Colleyville, TX 76034
(817) 281-8053

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Department of Transportation - Federal Aviation Administration
Office of the Chief Counsel, Attention Rules Docket
[AGC-200, Docket No. 28903]
800 Independence Avenue SW
Washington, DC 20591

Attention: Docket No. 28903

Subject: ***Comments on Docket No. 28903; Notice No. 97-7 and AC 21.101-XX, "Type Certification Procedures for Changed Products"***

Reference: (1) Notice of Proposed Rule Making (NPRM) No. 97-7
(2) Draft Advisory Circular (AC) 21.101-XX

Ladies/Gentlemen:

Comments on the reference NPRM and draft AC are included below:

1. Change Recommended for Notice of Availability for Public Comment for AC 21.101-XX.

A change is recommended for the following statement, "The FAA has declined to endorse the 'Safety Benefit - Resource Evaluation Guide' as a **means** of compliance with proposed Paragraph 21.101(b)(3) . . . it is being proposed for inclusion for information purposes." The following wording is recommended for the final Notice of Availability for AC 21.101-XX:

"The FAA has declined to endorse the 'Safety Benefit - Resource Evaluation Guide' as the ***sole* means** of compliance with proposed Paragraph 21.101(b)(3). However, the 'Safety Benefit - Resource Evaluation Guide' is provided as a ***first step*** in the means of compliance with Paragraph 21.101(c)(3). In many cases the Evaluation Guide can be a major step in showing compliance with 21.101(c)(3). An example of when the Evaluation Guide can be a major step in showing compliance is when the guide shows that costs in providing compliance with the latest amendments will drive compliance well into the 'not effective' area of the Evaluation Guide curve. Another example is when service history or a

design feature shows that compliance with later amendments will not 'contribute

materially to the safety of the changed product', i.e., no lives have been lost due to the hazard addressed by the latest amendment in the model being changed, or the model has design features that eliminate the hazard. For less clear cut circumstances, the Evaluation Guide will be useful in highlighting those issues (costs of labor, capital, operations, etc. and effectiveness of later amendments for a specific model) that need to be examined more thoroughly to determine whether compliance with later amendments is practical."

2. Changes recommended for proposed AC 21.101-XX, Figure 2.1, Safety Benefit - Resource Evaluation Guide.

The following changes are recommended for the occurrence curve to provide a "Safety Benefit -Resource Evaluation Guide" which is compatible with rotorcraft operations:

A. Change the "< 10% Deaths" and ">10% Deaths" lines to "<25% Deaths" and ">25% Deaths" lines. This change is needed since most rotorcraft commonly carry only 3 to 7 occupants, which would result in 0.3 to 0.7 deaths for accidents with 10% deaths, an obvious impossibility. A change to "<25% Deaths" would be compatible with accidents that have only one fatality and total occupants of 5 or more.

B. Change the ordinate of the curve to "occurrence per hours." Unlike Part 25 airplanes in Part 121 operations, rotorcraft operating rules do not require departures to be recorded. However, the recording of flight hours is required. Accordingly, more dependable data on rotorcraft flight hours are available than on departures per hour.

C. Change the ordinate to reflect fatal accident rates for rotorcraft operations, rather than for Part 25 airplanes in Part 121 operations. (See Enclosure No. 1 for an explanation of changes)

A sample "Safety Benefit - Resource Evaluation Guide" for rotorcraft is enclosed as Enclosure No. 2. It is recommended that this guide supplement the published guide to include a guide appropriate for rotorcraft as well as for transport airplanes.

3. A change recommended for Table 2.1 of proposed AC 21.101-XX.

Remove the middle column of Table 2.1. The right-hand column adequately covers 'descriptions for effectiveness of actions."

4. Changes recommended for Table 2.2 of proposed AC 21.101-XX.

A. Add wording to assure qualification costs as well as production costs are included in each column of the "Labor" row.

B. Add to "Terms used in Table 2.2" the following wording;

(i) To "Labor" term add,"...in the design, inspection, *test*, operation, or maintenance...," and

(ii) to "Capital" term add,"...facilities for design, *testing*, production, tooling, training,..."

5. Changes recommended for NPRM 97-7

In the preamble material for the final rule the following changes are recommended in

place of the wording on page 24295 for "Associated Advisory Circular":

Change the sentence, "As elsewhere in this edition of the Federal Register, the safety benefit - resource evaluation guide has been included in the draft advisory circular for purposes of **information** only." to read as follows:

"As elsewhere in this edition of the Federal Register, the safety benefit - resource evaluation guide has been included in the advisory circular for use as the ***first step*** in determining the certification basis in accordance with this rule."

This change will clarify and strengthen use of the safety benefit - resource evaluation guide, while leaving the determination of need for additional steps to the appropriate FAA representative.

Best regards,

RTEXX Consulting

Robert T. Weaver
Aviation Consultant

Enclosures:

Enclosure 1. Explanation of curve modification based on service/accident history

Enclosure 2. Safety Benefit - Resource Evaluation Guide modified to be compatible with rotorcraft design and operations

Enclosure No. 1

Explanation of Occurrence Rate Modification Based on Service/Accident Experience

As stated in the body of this letter, "Occurrence Per Departure" was changed to "Occurrence Per Flt-Hr", and the title of the curve was changed accordingly. This change was made in recognition of the fact that, while departures are recorded for Far 121 operations, they are not required for most helicopter operations. Helicopter flight-hours are recorded and provide a more valid measure of helicopter accident rates than estimated departure rates. The right-hand Y-Axis of the new "Occurrence Per Flt-Hr" was changed to accurately reflect flight-hour accident rates and helicopter, rather than FAR 121 airplane, accident rates.

The right-hand Y-Axis point of 10^{-7} was changed to 10^{-6} in the Safety/Resource Evaluation Guide of Draft AC 21.101-XX. This change is based on accident rates from the Report "CTR Safety/TOGAA" by Roy Fox(BHTI) June 7, 1995. [A summary of the R. Fox generated accidents rates is provided below]. First the FAR 121 fatal accident rate of 10^{-7} per departure is changed to $.7x10^{-7}$ per flight-hour by $(.05/.07)x10^{-7}$ from pages 4 and 5 of the R. Fox Report. Then the rate is adjusted for helicopter operations by multiplying the $0.7x10^{-7}$ rate by the ratio of
"GM Turb R/W" rotorcraft fatal accident rate (0.69/100,000 flight-hours) to the "Sch 121" fatal accident rate of 0.05/100,000 flight-hours (Ref. Page 4 of the R. Fox Report). This results in a yearly fatal accident rate of 10^{-6} per flight-hour for helicopters versus 10^{-7} per departure for FAR 25 airplanes as used in the draft AC.

Accident Rate Summary
From Report "CTR SAFETY/TOGAA"
By Roy Fox (BHTI) 7 June 1995

RATES	SCHEDULED PART 121 AIR CARRIERS	HELICOPTER TURBINE - GULF OF MEXICO	AIR TAXI 135
ACC/100,000 FLT-HRS (Pg. 4 of Fox Report)	0.2	1.6	3.9
FATAL ACC/100,000 FLIGHT-HOURS (Pg. 4)	0.05	0.69	0.26
FATAL ACCIDENTS PER 100,000 DEPARTURES (Pg. 5)	0.07	0.19 ESTIMATE	0.2

Enclosure No. 2

Safety Benefit - Resource Evaluation Guide for Rotorcraft